

U.S.S.N. 09/235,875

Filed: January 22, 1999

AMENDMENT AND RESPONSE TO OFFICE ACTION

In the Claims

1. (currently amended) A method for the biological production of polyhydroxyalkanoate containing 3-hydroxyhexanoate comprising providing genetically engineered bacteria expressing a phbA thiolase gene encoding an enzyme that converts butyryl-CoA and acetyl CoA to beta-ketohexanoyl-CoA, a phbB reductase gene that encodes an enzyme that converts beta-ketohexanoyl-CoA to beta-hydroxyhexanoyl-CoA, and a phbC polymerase gene that encodes an enzyme that polymerizes 3-hydroxybutyryl CoA and 3-hydroxyhexanoyl-CoA, wherein the enzymes are expressed in a sufficient amount to produce polyhydroxybutyrate-co-polyhydroxyhexanoate.

Claims 2-5 (Canceled).

6. (previously presented) The method of claim 1 wherein the phbC polymerase gene is incorporated into the bacterial chromosome.

7. (currently amended) The method of claim 1 for producing a copolymer of polyhydroxyhexanoate comprising providing a ~~wherein the~~ phbC polymerase gene ~~is~~ from a bacteria selected from the group consisting of *Aeromonas caviae*, *Comamonas testosteroni*, *Thiocapsia pfenigii*, *Chromatium vinosum*, *Bacillus cereus*, *Nocardia carolina*, *Nocardia salmonicolor*, *Rhodococcus ruber*, *Rhodococcus rhodocrous*, and *Rhodospirillum rubrum*.

Claims 8 and 9 (Canceled).

10. (previously presented) The method of claim 1 wherein the bacteria further comprises a gene encoding β -hydroxyacyl-ACP-coenzyme A transferase.

Claims 11-13 (Canceled).

45049658_1

3

MBX 020
077832/00077

U.S.S.N. 09/235,875

Filed: January 22, 1999

AMENDMENT AND RESPONSE TO OFFICE ACTION

14. (previously presented) The method of claim 1 wherein the bacteria is *E. coli*.
15. (currently amended) The method of claim 4 further comprising providing a wherein the gene encoding ~~the~~ a polymerase that accepts ~~3-hydroxyhexanoyl CoA and 3-hydroxybutyryl CoA~~ is from a bacterium selected from the group consisting of *R. eutropha*, *Klebsiella aerogenes*, *P. putida*, ~~and *Aeromonas caviae*~~.
16. (previously presented) The method of claim 1 wherein the bacteria expresses a gene encoding a D-specific enoyl-CoA hydratase.
17. (currently amended) The method of claim 1 wherein the bacteria expresses a PHB biosynthetic thiolase, ~~the~~ three enzymes from *C. acetobutylicum* that form butyryl CoA, the thiolase specific for 3-ketohexanoyl CoA, reductase specific for 3-ketohexanoyl CoA, and PHB polymerase that accepts both 3-hydroxybutyryl CoA and 3-hydroxyhexanoyl CoA.
18. (previously presented) The method of claim 1 wherein the bacteria expresses one or more fatty acid biosynthetic enzymes.
19. (previously presented) The method of claim 18 wherein the fatty acid biosynthetic enzymes convert acyl ACP to acyl CoA.
20. (original) The method of claim 19 where the enzymes are selected from the group consisting of ACP-CoA transacylase, acyl ACP thioesterase, and acyl CoA synthase.
21. (original) The method of claim 20 wherein the enzymes are acyl ACP thioesterase and acyl CoA synthase.

Claims 22- 34 (Canceled).